Space Weather Forecast

Issued on Sunday, 25 June 2023 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor/Moderate R1/R2 radio blackouts throughout. Slight chance of Minor G1 geomagnetic storm to start and especially to end the four days.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours with a single low-level Moderate flare from a sunspot region in the far northwest at 24/1217 UTC.

There are currently fourteen sunspot regions on the visible disc, however almost all are small and/or magnetically simple. The largest region approaching the central northwest quadrant is moderately large and complex in appearance and has undergone notable growth during the period. A smaller region in the far northwest was responsible for the largest flare in the period. Although this region is not particularly visually impressive, it does contain a moderately complex magnetic configuration. No new Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has largely been at slightly elevated levels, likely due to a connection to the fast wind of a coronal hole high-speed stream in the far west of the visible disc. An enhancement in solar parameters and a peak speed of 535km/s (strong) at 24/2355 UTC is indicative of a CME arrival in the near-Earth environment. The strength of the magnetic field carried by the solar wind generally declined from Moderate to background (weak) but increased to become Moderate again late in the UTC day. The north-south component varied erratically at occasionally Moderate levels. Resultant geomagnetic activity was Quiet (Kp2) to Active (Kp4).

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, but with a daily chance of becoming Moderate, with isolated Moderate-class flares possible.

Solar Wind / Geomagnetic Activity: Solar wind speeds should decrease early in the period from elevated or slightly elevated levels to background ambient levels. A minor increase is likely on day 3 with the combined effects of a glancing CME impact and onset of a weak equatorial coronal hole high-speed stream with speeds perhaps reaching slightly elevated levels again. Further peripheral high-speed stream effects are possible from a high latitude coronal hole on day 4 (28 Jun).

Geomagnetic Activity is expected to be mainly Quiet, but with a chance of Active intervals and slight chance of G1/Minor Storm conditions on day 3 (27 Jun) and very slight chance on days 1 and 4 (25 and 28 Jun).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, with only a negligible chance of S1 or greater.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	15	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	30	20	20
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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